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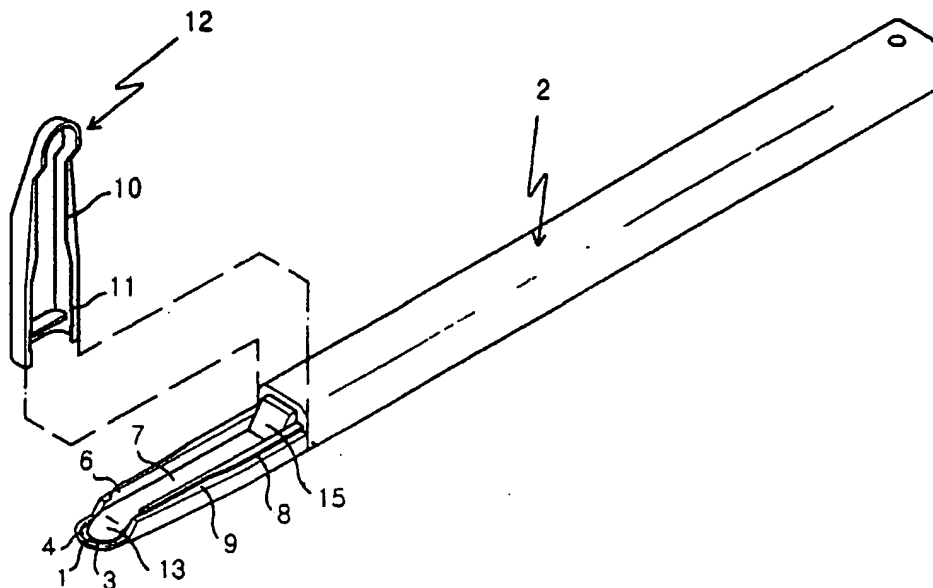
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(54) Title: IMPLEMENT TO GATHER BONE



(57) Abstract: The present invention facilitates harvesting a small amount of autologous bone necessary for supplementing insufficient alveolar bone when treating artificial teeth, which has a grip part formed in an insert injection molding to have an anticorrosive blade at the front end thereof, a bone-passing opening formed between the blade and the grip part, a cross wall forming a storage space for bone harvested by the blade and past through the bone-passing opening to be collected, and a cover detachably coupled to the grip part to slide along a guide groove formed in the upper portion of the cross wall and forming a storage space to be used as a surgical treatment container storing the harvested bone.

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— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## IMPLEMENT TO GATHER BONE

### TECHNICAL FIELD

5       The present invention relates to a surgical bone-collecting instrument employed to harvest a small amount of autologous bone. More particularly, the present invention relates to a surgical bone-collecting instrument capable of easily harvesting a small amount of autologous bone for supplementing insufficient alveolar bone with autologous bone upon artificial teeth treatments.

### BACKGROUND ART

10       In general, an artificial teeth treatment is carried out by drilling alveolar bones and fixing thereon fixtures each formed of titanium(Ti) being a body-friendly substance, closely attaching abutments on the fixtures, and joining prosthetic  
15       devices which are artificial teeth, and, in case that alveolar bones are not enough to fix the fixtures since the alveolar bones are recessed or sunken congenitally or acquiredly, the drilling comes after filling out the recessed or sunken alveolar bones with artificial bone or synthetic bone to raise the alveolar bones.

20       At this time, the filled-out artificial bone or synthetic bone cause biological troubles with alveolar bones or adverse effects may be occasionally produced with poor grafting due to different tissues from the alveolar bones. By considering the problems, a method is employed that transplants patients' bones, namely, autologous bones, minimizing adverse effects in terms of tissue for the filling-out treatment, but it is not easy to harvest autologous bones and the expense for that  
25       is high so that the artificial bones or synthetic bones causing adverse effects as above are used in most occasions.

### DISCLOSURE OF INVENTION

30       In order to solve the above problems, it is an object of the present invention to provide a surgical bone-collecting instrument which is convenient in use, facilitates harvesting autologous bones, and can prevent bones from damages during harvesting bones in order for all the harvested bones to be

transplanted.

It is another object of the present invention to provide a surgical bone-collecting instrument which is easily manufactured by insert injection molding to greatly reduce the manufacturing cost.

5 In order to achieve the above objects, a surgical bone-collecting instrument according to the present invention comprises a grip part formed in an insert injection molding in order for a blade to be placed at the front end thereof; a semicircular protrusion formed on the grip part, opposite to the blade, and forming a bone-passing opening together with the blade; cross walls formed opposite in  
10 left and right sides between the blade and the grip part and forming a storage space for collecting the harvested bones by the blade; locking protrusions formed on the upper parts of the left and right cross walls and forming guide grooves in the upper surfaces of the cross walls; and a cover having guide protrusions sliding along the guide grooves, and detachably coupled to the grip part by locking  
15 grooves formed to correspond to the locking protrusions.

At this time, in the preferred embodiment, the blade is formed of a stainless steel material, and the blade is formed slanted 70 ~90° toward the grip part.

Further, a slanted surface is formed on the upper part of the semicircular protrusion in order for the harvested bones by the blade to easily move into the  
20 storage space.

Further, the cover has a storage space narrowed at front in order to be used as a surgical container for storing bones harvested by the blade.

### BRIEF DESCRIPTION OF THE DRAWINGS

25 The above objects and other features of the present invention will become more apparent by describing in detail a preferred embodiment thereof with reference to the attached drawings, in which:

Fig. 1 is an exploded perspective view for showing a surgical bone-collecting instrument according to an embodiment of the present invention;

30 Fig. 2 is a partially cross-sectioned view for showing a surgical bone-collecting instrument according to an embodiment of the present invention; and

Fig. 3 is a view for showing a surgical bone-collecting instrument in use

according to an embodiment of the present invention.

### BEST MODE FOR CARRYING OUT THE INVENTION

Fig. 1 is an exploded perspective view for showing a surgical bone-  
5 collecting instrument according to an embodiment of the present invention, and Fig.  
2 is a partially cross-sectioned view for showing a surgical bone-collecting  
instrument according to an embodiment of the present invention.

As shown in Fig. 1 and Fig. 2, a surgical bone-collecting instrument has a  
grip part 2 formed in an insert injection molding in order for a blade 1 to be placed  
10 at the front end thereof; the blade 1 being formed of a stainless steel material to  
have a certain strength and an anticorrosive property, a semicircular protrusion 3  
formed on the grip part 2 and opposite to the blade 1 and forming a bone-passing  
opening 4 together with the blade 1 to pass harvested bones, cross walls 6 formed  
opposite in the left and right sides between the blade 1 and the grip part 2 and  
15 forming a storage space 7 for collecting the harvested bones by the blade 1, a  
slated surface 13 formed on the semicircular protrusion 3 in order for the  
harvested bones by the blade 1 to easily move into the storage space 7, locking  
protrusions 8 formed on the upper parts of the left and right cross walls 6 and  
forming guide grooves 9 in the upper surfaces of the cross walls 6, and a cover  
20 having guide protrusions 10 sliding along the guide grooves 9, and detachably  
coupled to the grip part 2 by locking grooves 11 formed to correspond to the  
locking protrusions 8.

At this time, the cover 12 has a storage space narrowed at front in order to  
be used as a surgical container for storing bones harvested by the blade 1, the  
25 blade 1 is formed slanted 70 ~ 90° toward the grip part 2 to facilitate harvesting  
bones when the grip part 2 is held, a cross-sectioned shape of the grip part 2 is  
formed in a circle, a triangle, an ellipse, a polygon, or the like, and plural  
protrusions can be formed on the outer circumferential surface of the grip part 2 to  
prevent the instrument from slipping out when a surgeon holds the grip part 2.

30 Of the drawings, a reference number 15, not described, denotes a  
reinforcing rib for building up strength around the cross walls 6 extendedly formed  
with respect to the grip part 2.

Hereinafter, operations of the surgical bone-collecting instrument according to the present invention will be described in detail as below with reference to the accompanying drawings.

Fig. 3 is a view for showing a surgical bone-collecting instrument in use according to an embodiment of the present invention.

As shown in Fig. 3, an operator holds the grip part 2, closely touch a patient's bone with the blade 1, and slowly scratch it with pressure to harvest a predetermined amount of bone. The harvested bone by the blade 1 passes through the bone-passing opening 4 formed between the blade 1 and the semicircular protrusion 3, moves to and is gathered in the storage space 7 formed by the cross walls 6 along the slanted surface 13 formed on the upper part of the semicircular protrusion 3.

At this time, the bone collected in the storage space 7 is prevented from loss by the cross walls 6 and the cover 12 so that all the collected bone can be used for transplanting, and it is not required to collect lots of bone from patient's bone since it is enough with an amount of bone necessary for transplanting.

In the meantime, if the bone-collecting job is completed as above, the grip part 2 is turned 180° for the bone stored in the storage space 7 to move into a storage space of the cover 12. Accordingly, the operator takes out the cover 12 from the grip part 2 in order for the bone stored in the cover 12 to be used for transplanting.

At this time, the cover 12 slides to be separated from the grip part 2 by the guide protrusions 10 of the cover 12 which are coupled to the guide grooves 9 formed on the upper parts of the cross walls 6, and the bone can be easily taken out of the cover 12 through the narrow portion formed on one side of the storage space of the cover 12.

In the meantime, some gums of the patient are cut open in case of transplanting the patient's bone, so it can be easily carried out to collect bone since portions for bone collection exist near the portion to be surgically treated.

#### INDUSTRIAL APPLICABILITY

As stated above, the present invention has an advantage in that an

operator can easily harvest a small amount of bone in state that he holds the grip part and closely touches patient' bone with the blade, the loss of bone can be prevented during collecting bone, and the bone-collecting instrument can be simply manufactured.

- 5        Although the preferred embodiment of the present invention has been described, it will be understood by those skilled in the art that the present invention should not be limited to the described preferred embodiment, but various changes and modifications can be made within the spirit and scope of the present invention as defined by the appended claims.

## CLAIMS

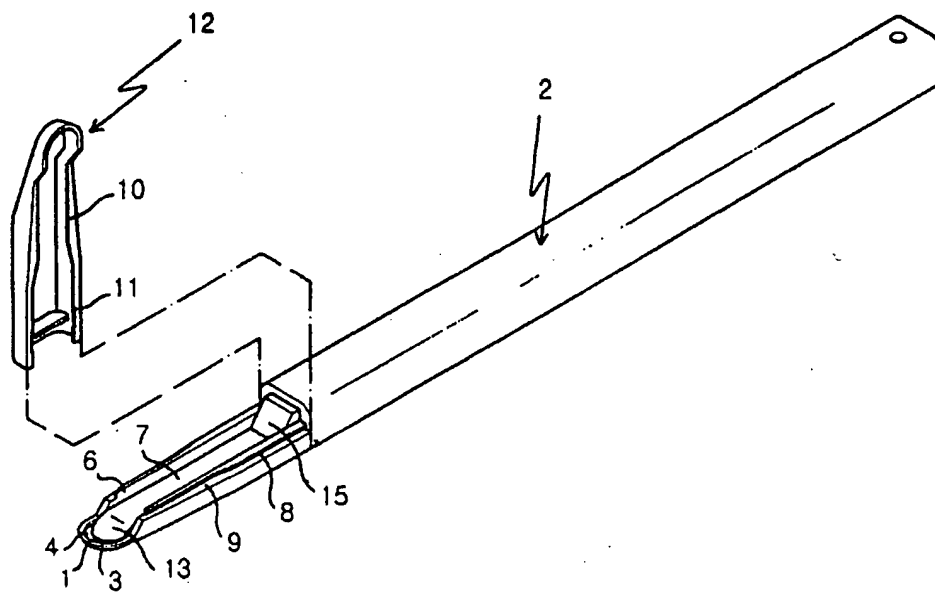
What is claimed is:

- 5           1. A surgical bone-collecting instrument, comprising:  
          a grip part formed in an insert injection molding in order for a blade to be placed at the front end thereof;  
          a semicircular protrusion formed on the grip part, opposite to the blade, and forming a bone-passing opening together with the blade;  
10           cross walls formed opposite in left and right sides between the blade and the grip part and forming a storage space for collecting the harvested bones by the blade;  
          locking protrusions formed on the upper parts of the left and right cross walls and forming guide grooves in the upper surfaces of the cross walls; and  
15           a cover having guide protrusions sliding along the guide grooves, and detachably coupled to the grip part by locking grooves formed to correspond to the locking protrusions.
- 20           2. The surgical bone-collecting instrument as claimed in claim 1, wherein the blade is formed of a stainless steel material
3. The surgical bone-collecting instrument as claimed in claim 1 or claim 2, wherein the blade is formed slanted 70 ~90° toward the grip part.
- 25           4. The surgical bone-collecting instrument as claimed in claim 1, wherein a slanted surface is formed on the upper part of the semicircular protrusion in order for the harvested bones by the blade to easily move into the storage space.
- 30           5. The surgical bone-collecting instrument as claimed in claim 1, wherein the cover has a storage space narrowed at front in order to be used as a surgical container for storing bones harvested by the blade.



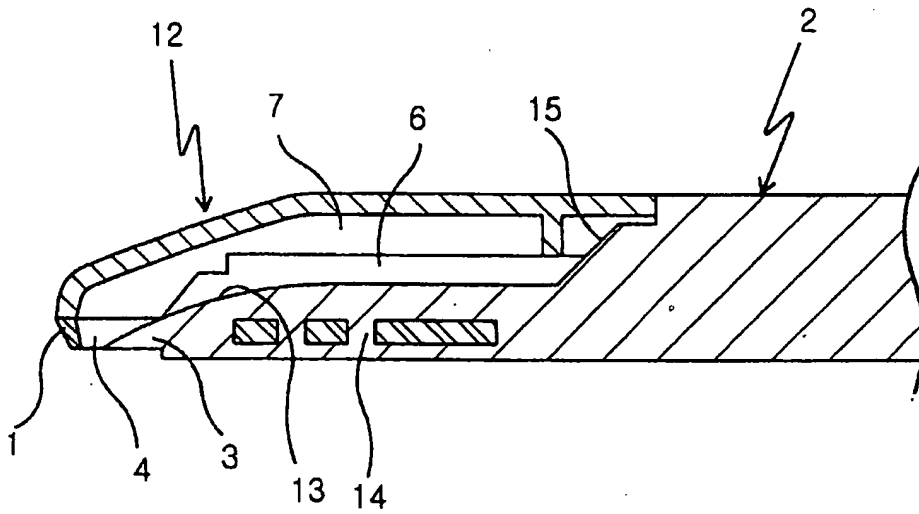
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Fig. 1



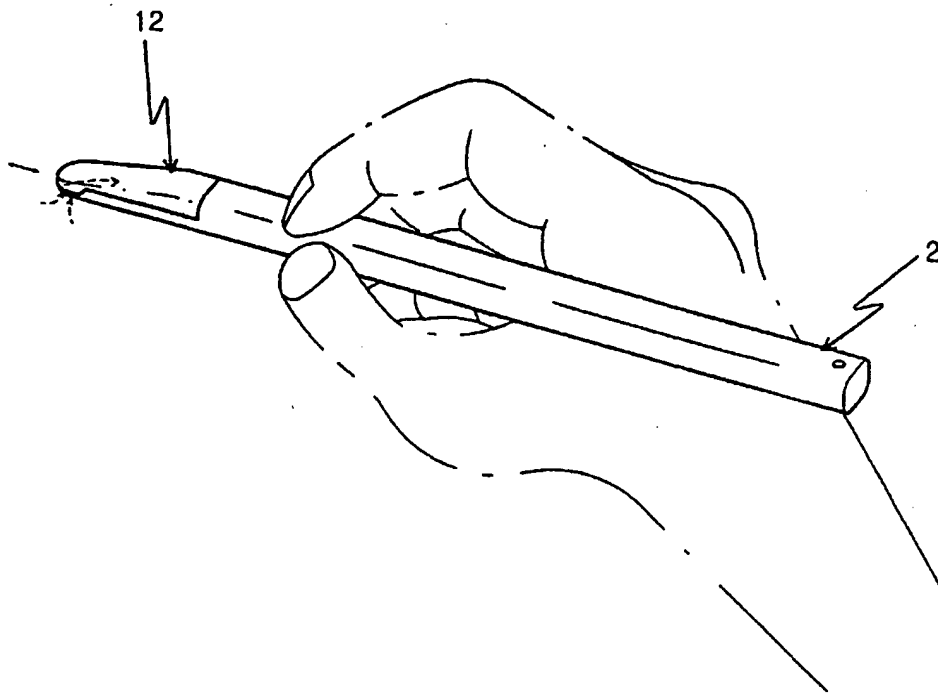
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Fig. 2



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Fig. 3



# INTERNATIONAL SEARCH REPORT

national application No.  
PCT/KR02/01848

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7 A61C 8/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 A61C; A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Koreans Patents and applications for inventions since 1975

Koreans Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,110,177 A ( Maxilon Laboratories, Inc. ) 29 AUGUST 2000 see figures 1 -8 and claims.	1-5
Y	US 5,683,406 A ( Maxilon Laboratories, LLC ) 04 NOVEMBER 1997 see figures and claims.	1-5
A	US 6,139,509 A ( Hansen Yuan et al. ) 31 OCTOBER 2000 see entire document.	1
A	US 6,017,348 A ( INNOVASIVE DEVICES, INC. ) 25 JANUARY 2000 see entire document.	1
A	US 4,600,005 A ( PLILIP M.HENDEL) 05 JULY 1986 see entire document.	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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